1903

Sixteenth Annual Report of the Agricultural Experiment Station of the University of Tennessee for 1903

University of Tennessee Agricultural Experiment Station

SIXTEENTH ANNUAL REPORT

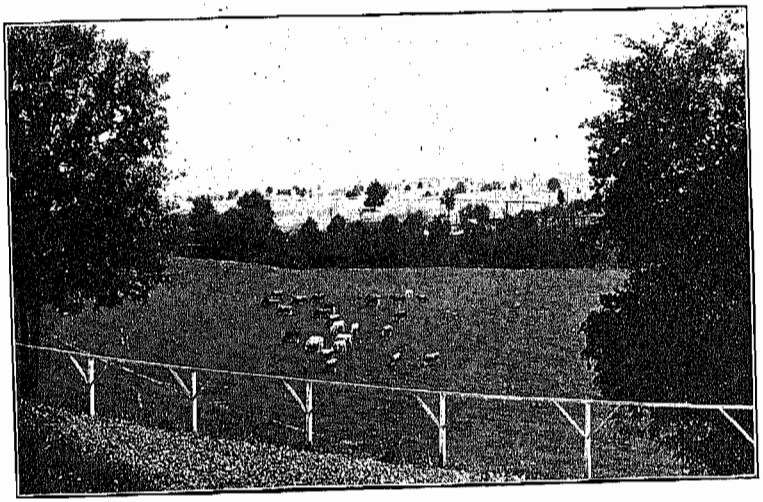
OF THE

Agricultural Experiment Station

OF THE

UNIVERSITY OF TENNESSEE

FOR 1903



THE DAIRY HERD

KNOXVILLE
UNIVERSITY OF TENNESSEE PRESS
1904

THE AGRICULTURAL EXPERIMENT STATION

OF THE UNIVERSITY OF TENNESSEE

The Station has facilities for analyzing fertilizers and cattle foods; for testing milk and dairy products; for examining seeds with reference to their purity or germinating power; for identifying grasses and weeds; and for investigating the diseases of fruit and fruit trees, grains and other useful plants.

Packages by express, to receive attention, should be prepaid.

All communications should be addressed to the

AGRICULTURAL EXPERIMENT STATION,
Knoxville, Tennessee.

☞The Experiment Station building, containing the offices and laboratories, and the plant house and part of the Horticultural department, are located on the University campus, 15 minutes walk from the Custom House in Knoxville. The experiment farm, the barns, stables, dairy building, etc., are located one mile west of the University, on the Kingston pike. The fruit farm is adjacent to the Industrial School and is easily reached by the Middlebrook car line. Farmers are cordially invited to visit the buildings and experimental grounds.

Bulletins of this Station will be sent, upon application, free of charge, to any farmer in the State.

KNOXVILLE, TENN., January 15, 1904.

To His Excellency, James B. Frazier, Governor of Tennessee:

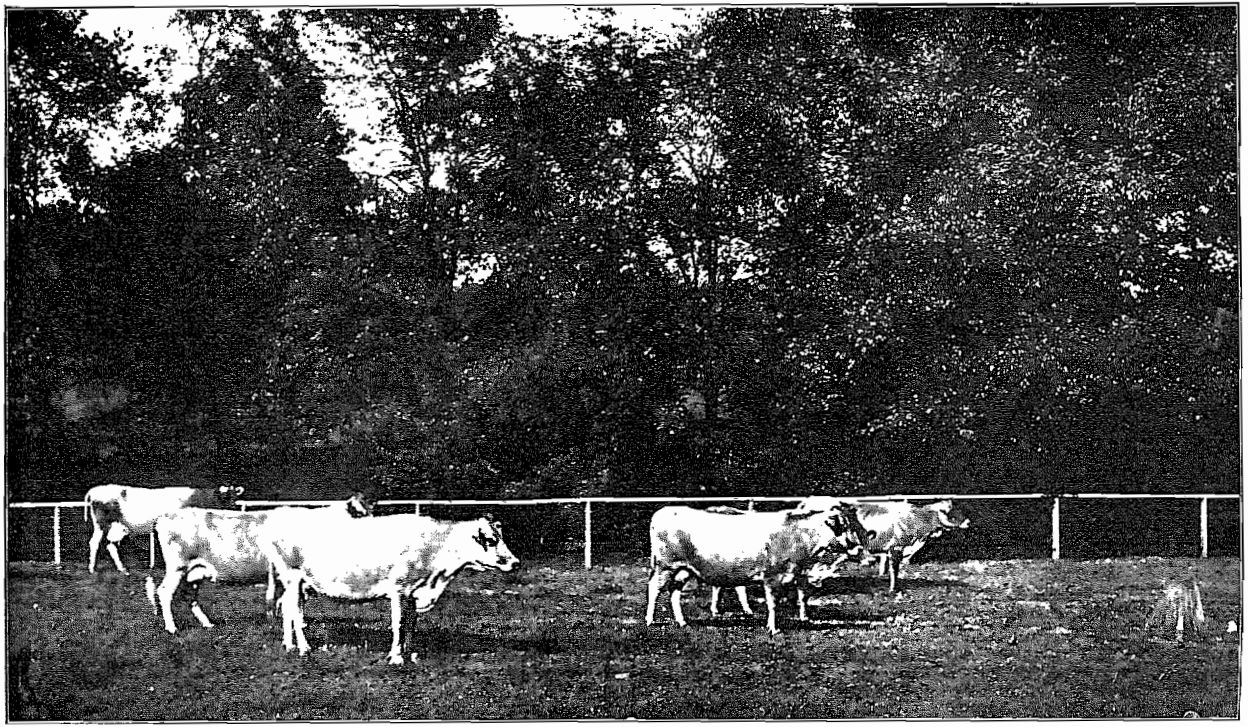
SIR: I have the honor to submit herewith, on behalf of the Board of Trustees of the University of Tennessee, a report of the work and the expenditures of the Agricultural Experiment Station for the year 1903.

This report is submitted in response to the requirements of the law that the Board having direction of the Experiment Station shall annually submit to the Governor of the State a report of its operations and of its expenses, on or before the first of February of each year.

We are glad to be able to report that the Station has, during the past year, made great progress in all departments and is becoming steadily more and more useful and influential for the advancement of agriculture in Tennessee and the South.

Very respectfully yours,

CHARLES W. DABNEY,
President University of Tennessee.



Some Farm Jerseys

REPORT OF THE AGRICULTURAL EXPERIMENT STATION OF THE UNIVERSITY OF TENNESSEE FOR 1903

REPORT OF THE DIRECTOR

To President Charles W. Dabney:

The Station has had an unusually prosperous year. For the first time in its history it has received recognition at the hands of the State, through an appropriation of $10,000 for the purchase of additional land for the farm. The University farm proper now consists of 145 acres of land bounded on one side by the Tennessee river and having a long frontage on Kingston pike. Besides this there is what is known as the South farm of 90 acres, which also includes the greater part of the horticultural grounds. The farm contains four of the principal soil types of the State, which admit of experimental work being done of the greatest practical value for river bottom and upland farms alike. The situation of the farm is admirable. Being close to town it can be conveniently reached by visitors. Its natural drainage is well-nigh perfect. The new land came into our possession in June, and since that time the hedge dividing it from the original farm has been removed and the appearance of the whole tract thus greatly improved. A large number of the trees have been removed from the new land and a portion of it has been broken up and sown in winter cereals. The purchase of the new farm makes possible the practice of a three to five years' rotation of crops on a scale sufficiently extensive to give reliable results. It will also permit the extension of important feeding experiments.

It is a pleasure to report that harmony exists in the staff and that every member is using his best efforts to promote and foster the interests of the Experiment Station. A number of the new investigations promise results of general interest, and those instituted in former years are giving a better insight into the agriculture of the State through the accumulation of more reliable data.

CHANGES IN THE STAFF

Comparatively few changes have taken place in the staff during the past year. Dr. M. Jacob, consulting veterinarian, was called to the chair of Veterinary Medicine and Sanitary Science in the Agricultural and Mechanical College of Iowa at Ames. His place has been acceptably taken by Dr. W. G. Shaw, a graduate of the University of Pennsylvania.

The last Legislature passed a law placing the analysis of commercial fertilizers under the direction of the Station and this made additional assist-

ance in the Chemical department necessary. Mr. H. H. Hampton, B. S., a recent graduate of the University who has made a specialty of chemistry, was appointed last July and is doing acceptable work.

Prof. W. M. Fulton, who for several years has been meteorologist of the Station, wished to be relieved of this position because of pressure of duties in other directions and his wish has been complied with.

Mr. F. H. Broome, for several years librarian of the Station, has undertaken the additional duties of Station photographer, an office he is filling with great satisfaction.

POLICY OF THE STATION

The work of the Station has been developed along consistent lines and results of the greatest value to the State are being accumulated. At present the general policy of the Station may be summed up as follows:

1 To continue the investigations and the maintenance of the several departments.

2 To bring about a closer cooperation between these departments.

3 To modify and improve these departments so far as finances and opportunity will permit.

4 To bring about the closest relationship between the Station and the agricultural institutions of the State.

5 To cooperate with and assist the farmers in every possible way.

6 To work through farmers' institutes and other agricultural organizations to show the people the value of the Station's work.

7 To cooperate with the U. S. Department of Agriculture along all possible lines.

8 To promote and develop cooperative experiments with the farmers of the State, and to make maps showing the soil types and the variety of crops and fruits adapted to the different sections.

With regard to the future policy of the Station it may be said that should the State see fit to make appropriations, all of the departments should be consistently developed. The importance of animal husbandry, dairy husbandry and agriculture make it essential that these divisions be strengthened as soon as possible. It is also important that assistants be provided in horticulture and botany, and especially in chemistry, since many of the parallel lines of work in progress at the Station now require the cooperation of the chemist. Two new departments should be created as soon as possible—a Department of Entomology and of Veterinary Science.

In the belief that it is impossible for the Station to do the most effective work without a definite plan of action on the part of its several divisions, the following lines of investigation have been planned out and agreed upon:

LINES OF WORK

There will be a continuation of the study of corn and various other cereals for pork production when fed with and without skim milk, and of the grazing experiments to determine the best rotation of crops for hog raising.

Experiments in cattle feeding will be continued to determine the value of silage for beef production with various forms of grain, including cotton-

seed meal and corn; the influence of roughness in cattle feeding from the clovers and from the coarse fodders such as sorghum, corn stover, etc.; and the best maintenance ration for beef cattle to be finished on grass.

The work in the Dairy division is now planned to cover about five years. Its object is to determine to what extent alfalfa, cowpeas, soy beans, red clover, crimson clover, etc., may be substituted for grain when fed with silage to the dairy cow. The relative values of the several forms of grain are also being studied, as well as the best varieties and succession of soiling crops.

Experiments with sheep will be undertaken as soon as possible.

On the farm proper investigations will be continued looking to the improvement of poor lands through grazing; to determine the crops best adapted for silage and the best methods of cultivating the same, and to determine suitable crop rotations for Tennessee, the influence of various soil treatments and commercial fertilizers on crop production, and the cost of producing farm crops.

On the plats, investigations for the improvement of corn and winter cereals through selection will be continued and an endeavor will be made to disseminate the best varieties of these leading crops throughout the State. Grasses and clovers for meadows and pastures will receive attention. A general study of varieties of forage, fodder and grain crops will also be made.

The Horticultural department will undertake to determine the value of fertilizers for forcing small vegetables and fruits and other truck crops; also remedies for insects and fungous diseases which may attack fruit plantations. Orchard tillage and a study of new varieties of fruits will constitute a part of the work.

The Botanical department proposes to undertake a comprehensive study of pear blight and the so-called clover sickness which is causing much trouble in the State at the present time.

The Chemical department will endeavor to make a soil survey of Middle and West Tennessee. Work in Middle Tennessee has already been commenced. In connection with the soil investigations experiments to determine the best fertilizers and methods of fertilization for the several soil types will be carried on.

The foregoing is a brief summary of the work outlined for several years by the different departments of the Station. It covers the leading interests of the State as far as practicable with the means and men available at the present time.

EQUIPMENT

A new wing has been added to the dairy barn, three stories in height. The ground floor is occupied by stables for calves, dry cows and other necessary stock; the second floor is used as an implement house, and the third floor as a grain room.

The Station grounds were improved the past year by the removal of some small buildings occupied formerly as a dairy and a residence to a new location, where they have been made into two comfortable houses for farm laborers. A new fence was also constructed along Third creek, enclosing what will constitute a Bermuda pasture another season.

The Station has received a considerable number of donations, including implements, etc., and these are appreciated. About 80 papers are annually given to the library by the publishers in exchange for the bulletins.

During the year the live stock interests of the Station have received a considerable impetus. Hon. R. P. Hite, of Gallatin, Tenn., has made the Station a present of a pair of Poland China hogs. Hon. Overton Lea, of Nashville, Tenn., has donated a pair of Sussex cattle. Mr. Jos. J. Kittel, of New York City, has loaned the Station a car load of high-grade Herefords to feed the coming winter.

Feeding experiments are in progress with 32 head of beef cattle to determine the relative value of silage with various meal mixtures for the winter feeding of beef cattle; also to study the best kind of roughness and meal for the maintenance of beef cattle to be finished on grass next summer.

FARMERS' INSTITUTES

Farmers' institutes have been attended by various members of the Station staff at the following places:

Cleveland, Columbia, Crossville, Camden, Paris, Huntingdon, Dresden, Union City, Trenton, Bolivar, Somerville, Lexington, Decaturville, Brownsville, Alamo, Henderson, Selmer, Covington, Ripley, Dyersburg, Cookeville, Lebanon, Carthage, Gallatin, Hartsville, Woodbury, Murfreesboro, Manchester, Sparta, McMinnville, Shelbyville, Lynchburg, Winchester, Fayetteville, Lewisburg, Franklin, Pulaski, Lawrenceburg, Dickson, Waynesboro, Hohenwald, Centerville, Clarksville, Erin, Dover, Ashland City, Harriman, Jackson, and Nashville.

It is only necessary to say that the farmers' institute movement has come to stay in Tennessee and that it is gathering strength and character each year. The farmers are taking greater interest in these meetings and undoubtedly an attendance of from 25,000 to 30,000 will be reached the present year.

The correspondence of the Station has increased in all its departments. This is another evidence of the growing appreciation of its work on the part of the farmers.

During the past year the following publications, composing Vol. XVI., have been issued:

Bulletin No. 1—Fertilizer Experiments, by Charles A. Mooers.

Bulletin No. 2—San Jose Scale, by Charles A. Keffer.

Bulletin No. 3—Corn, Wheat and Soy Bean Meal with Skim Milk for Pork Production, by Andrew M. Soule and John R. Fain.

Bulletin No. 4—Influence of Climate and Soil on the Composition and Milling Qualities of Winter Wheat, by Andrew M. Soule and Phares O. Vanatter.

Sixteenth Annual Report.

It is impossible to supply the demand for our publications, though 12,000 copies are now printed, and bulletins of the greatest value to the farmers remain unpublished because of insufficient money to print them. The State could not make a wiser appropriation than one of $2,000 a year for the publication of additional numbers and copies of the Station bulletins for free distribution to the farmers of the State.

The growing value of the Station work need not be commented upon; it speaks for itself. The Station is reaching out in all directions and becoming more and more popular. It is doing an enormous amount of work with limited facilities, but it can not attain its greatest value until more liberally supported in a financial way.

NEEDS OF THE STATION

Some of the more important needs of the Station may be summed up as follows:

Money to conduct cooperative investigations in various sections of the State relative to truck crops, cotton, tobacco, soils, fertilizers and stock. For this purpose an appropriation of $5,000 from the State is essential.

An appropriation of $5,000 a year to develop the live stock investigations in progress at the present time and to purchase additional specimens of live stock of representative breeds for the purpose of extending these experiments, and for the development of a department of breeding and feeding with special reference to the production of horses and mules.

An appropriation of at least $5,000 annually for the employment of an entomologist and a veterinarian is imperative, and the Station needs at least $3,000 for the purchase of additional tools, implements and machinery and the extension of the field and feeding experiments along legitimate lines.

The present quarters of the Station are too cramped. This applies to laboratories, offices, barns and general farm buildings. The dairy building needs enlargement, and this would require an appropriation of about $5,000. A new barn is an imperative need for the housing and better care of the crops produced on the farm and the live stock fed during the winter. It would cost about $5,000. Thus we need an annual appropriation of about $20,000 and a special appropriation of $10,000 for buildings, and it is the sincere hope of those who are earnestly laboring to promote and develop the agriculture of the State that the next Legislature may find it possible to supply all these urgent needs.

Respectfully submitted,

ANDREW M. SOULÉ, *Director.*

REPORT OF THE BOTANIST

The botanist of the Experiment Station has devoted the greater part of his time during the past year to a continuation of his investigations on the effect of fungicides on peach foliage. Elaborate experiments were outlined early in the year looking toward the treatment of brown rot of the peach. Unfortunately the crop was so injured by winterkilling in this entire region that these experiments had to be abandoned for the time. An experiment was made on this same disease in Georgia, with the kind cooperation of Professor W. M. Scott, late State entomologist of Georgia. While the results attained in that State were in some respects encouraging, they were not sufficiently decisive to warrant publication at present. It is hoped that conditions will be favorable for pursuing this investigation to a successful

issue during the next season. In addition to this work in Georgia a number of tests were made of the effect of spraying mixtures on peach foliage here at the Experiment Station. While some interesting results were obtained, the subject is not yet ready for further publication.

Several additions have been made to the equipment of this department. The most important is a large collection of the *Comptes rendus*, purchased for the library.

Many notes have been made as to the occurrence and distribution of plant diseases within the State of Tennessee. Probably the most important problem belonging to the field of the botanist now confronting the farmers of this State is the failure of clover in nearly every section. Plans have been made to begin an extensive investigation of this question, with the hope of discovering some means of relief.

The most important need of this department is a greenhouse especially fitted up for research work in plant physiology.

Respectfully submitted,

SAMUEL M. BAIN, *Botanist.*

REPORT OF THE HORTICULTURIST

The work of the Department of Horticulture for the past year was largely a continuation of experiments and observations begun in previous years.

A bulletin was issued giving the results of remedial experiments for San Jose scale. It was found that the lime-sulphur-salt solution is preferable to the kerowater treatment, largely because of the uneven working of the kerowater pump.

Experiments to determine the value of commercial fertilizers for small fruits, orchard fruits and trucking crops were inaugurated in the spring of 1903, and will require several years for their completion, although the results will be published from year to year, as each year's experience is of value. A difficulty in the way of complete success with work of this nature is the uneven character of our soils. In this, however, the land of the Horticultural department does not differ materially from other farms. The great importance of this line of investigation is appreciated when the dimensions of the trucking and fruit growing industry are realized. Since the trucker and fruit grower seldom combines stock raising with his crop farming, experimental knowledge of fertilizers is of especial importance to him. This season we have a series of fertilizer plats devoted to celery, tomatoes and strawberries. Unfavorable weather completely cut off the celery, but fairly good results may be expected from the other crops. The experiment orchard and vineyard have been divided into plats for various fertilizers and a careful record is being kept. Significant results can not be expected until the trees come into bearing.

The first planting in the experiment orchard was made in 1900. The number of blanks in this planting, and the number originally planted, are as follows:

	No. trees dead	No. trees planted	No. varieties
Apple	8	137	7 standard sorts; 40 seedlings
Pear	11	80	8
Peach	8	115	13
Plum	3	50	5
Cherry	1	30	3
Quince	0	40	4
Total	31	452	

In 1901, 77 apple trees in 19 standard varieties and 77 peach trees in eight varieties were added to the orchard. All the peach trees are in fine condition, but 10 apple trees have died. In 1902, 100 apple trees in three varieties were planted. Of these, 50 trees came from one nursery and all are in fine condition. Of the other 50, from a different nursery, over half failed to live through the first growing season. The soil and slope are the same in the two cases and the great loss in the latter case must be accounted for by the condition of the plants when received. As they had made thrifty growth and were clean it is possible they had been stripped of their leaves too soon. Of the losses in the first setting, the three plums, two apples and five pears did not survive the first summer. The cherry was killed by crown gall, the peaches all were killed in experiments with crude petroleum and kerosene against San Jose scale, and the remaining trees were killed by the roundheaded borer.

From the first year the trunks of the trees have been washed with strong alkali washes as a preventive of borers; but the treatment seems ineffective, and this insect will receive especial attention hereafter. The only other severe pest that has developed in the orchard is the woolly aphis, which has been kept in control by the free use of tobacco dust on the main roots.

During the year a small addition has been made to the tool shed and a secondhand propagating house has been purchased but has not been set up. The orchard, vineyard, and small fruit plats have made fine growth during the year, in spite of unfavorable weather conditions, and it is believed they will become increasingly useful as a basis for experiments in fertilizers, pruning and spraying.

Respectfully submitted,

CHARLES A. KEFFER, *Horticulturist.*

REPORT OF THE CHEMIST

During the past season one bulletin was gotten out by the chemist. It was published under the title of "Fertilizer Experiments," and gives the results of experiments on different crops and on different kinds of soil. The conclusions are considered to be applicable to a large part of the State, in particular to East Tennessee, the Cumberland plateau, the red soil and the "barrens" of the Highland Rim, and the poor uplands of West Tennessee.

A large part of the chemical work has been done in connection with the examination of different varieties of wheat which have been grown at the Experiment Station farm for the last four seasons. The results of this work have appeared in Bulletin No. 4 of Vol. XVI.

Some time was spent in carrying out digestion experiments with different kinds of ensilage—sorghum, corn, cowpea, soja bean, and velvet bean. The work was undertaken with these kinds because they are of special importance throughout the State. In these experiments sheep were the only animals used, and as they did not relish either the soja bean or velvet bean ensilage the results obtained are in need of verification. In nearly every trial three or four sheep were used, so that good averages were obtained.

On account of the work mentioned and the miscellaneous analyses of feeding stuffs, fertilizers, mineral waters, etc., but little progress was made on the investigation of Tennessee soils. The soil problems which can be solved to a great extent in the laboratory are very important, and it is hoped that this work can be so prosecuted during the next year that a comprehensive bulletin can be published on the subject. Most of the work done thus far has been on the type soils of East Tennessee. The soils of Middle and West Tennessee should next receive attention.

The last Legislature passed a fertilizer law, which places the chemical examination of the fertilizers for the State inspection at the Experiment Station. A new laboratory has been fitted up for this work and a competent assistant engaged to make the analyses.

The following is a résumé of the analytical work:

Wheats	207
Fertilizer materials	11
Feeding stuffs	43
Soils	3
Ashes	7
Mineral waters	10
Minerals	37

Respectfully submitted,

CHARLES A. MOOERS, *Chemist.*

REPORT OF THE ASSISTANT AGRICULTURIST

The work of the Farm department for the past year has been chiefly along lines already established. The work with alfalfa was enlarged by the seeding in September, 1902, of another plot of three acres. At the present time it is very much superior to those seeded in the spring.

The work with silage crops has been continued, and there will be silage from corn, sorghum and a mixture of the two for feeding during the winter. Lady peas are being used largely with the silage crop instead of Whippoorwills. There is one plat where Whippoorwills selected from climbing vines are being used. Last year a plat of soy beans was grown and mixed with corn for silage.

The feeding and grazing experiment with hogs is a duplicate of last year's work. With beef cattle the rations were changed. An experiment was begun to test cotton-seed meal by itself and with corn and cob meal in connection with silage. The value of clover hay in connection with silage is also being tried. An experiment with stock cattle to compare four kinds of roughage was begun. These cattle were grazed during the summer to compare the value of winter feed on grazing qualities.

The additional tract of land purchased by the State will add very materially to the work when it is brought to the proper condition. A rotation of farm crops can now be adopted that will increase the supply of grain and roughage without a corresponding increase of labor. Probably more roughage can be produced than can be housed under present conditions.

Respectfully submitted,

JOHN R. FAIN, *Assistant Agriculturist.*

REPORT OF THE ASSISTANT FOR PLAT WORK

Twenty acres of land and about 1000 plats are devoted to field experiments.

The past season has been very favorable for the production of winter cereals, especially winter wheat. The yield this year was 48 bushels, the average for four years being 37 bushels. Winter barley gave an average yield of 55 bushels, and winter oats 61 bushels. Some very valuable lessons have been learned from our work with winter cereals, the most important being that winter cereals can be successfully grown in Tennessee and on many soils will yield as much grain as corn, besides protecting the land from washing during the winter. There is a great difference in varieties and the best varieties will not run out readily as is generally believed. Tennessee wheats are high in protein and the best varieties have excellent milling qualities.

The past season was not very favorable for the production of forage crops, especially corn and cowpeas. About 40 varieties of corn have been tested at this Station for the last three years on a medium upland soil. For the production of grain alone on this class of soil some of the medium and early varieties have done remarkably well. This kind of soil was not well suited to river bottom corn, and while some of the varieties made very large yields in a favorable season when farmyard manure was used, they are on the average considerably behind in point of yield of grain.

On this class of soil there is probably no variety that will give better satisfaction than Hickory King. Cocke's Prolific is an excellent variety for yield of both grain and forage on a little better class of soil. The chief objection to this corn is that it has a weak stalk. The Station is carrying on selection work with these two varieties to increase their yielding power, and also in the case of Cocke's Prolific to produce a stronger stalk. Other varieties that made a good yield of grain on the average for three years were Reid's Yellow Dent, Iowa Gold Mine, Early Leaming, 100 Day Bristol, and Golden Beauty. There is probably no corn that will beat Huffman on good river bottom land. Cocke's Prolific, Virginia Ensilage, Osborne, and Virginia Horsetooth are all good varieties on strong land.

Corn is affected very readily by the class of soil on which it is grown and no doubt many failures result from trying to grow it on land for which it is not suited. More care should be exercised in selecting and breeding corn for the different classes of soil in the State.

Sorghum is not so readily affected by the class of soil on which it is

grown. It will stand a drought better and on a medium or poor soil will yield more than corn.

The soy bean has always given good results. It stands a drought as well as the cowpeas, if not better. The forage produced is about equal to that of the cowpea, but the soy bean will yield from 20 to 30 bushels of seed, which is double the amount produced by the cowpea.

The result of four years' work with grasses teaches very plainly that too many grasses are recommended for cultivation. Out of 30 varieties tested separately and in many different mixtures not more than five or six can be recommended for cultivation, and some of these only on special classes of soil. The grasses that have succeeded are orchard-grass, tall-oat, red-top, Kentucky blue and Bermuda. On a very poor cherty soil there was no mixture of grasses superior to orchard-grass, tall-oat or red-top seeded alone.

Plowing under a crop of cowpeas nearly doubled the yield of red clover on a rather poor cherty soil. The same result was obtained where farm-yard manure was applied at the rate of 15 tons per acre. Alsike and white clover can often be used to good advantage where red clover fails when the object in view is to improve the soil by having a legume grow on the land for two years.

The department now owns most of its tools and implements and has a separate house in which to keep them. A wire cage that will keep out rats and sparrows has been built for preserving samples of grain. Five acres of land have been added to the forage crop section, making it possible to do more and better work with these crops, especially corn, and also to carry on the work in better rotation. The department is in better condition to do good work than ever before.

Respectfully submitted,

PHARES O. VANATTER, *Assistant for Plat Work.*

REPORT OF THE DAIRYMAN

The experiments to ascertain the feeding value of cotton-seed meal and wheat bran alone as compared with a mixture of the two have been completed but not published.

The dairy herd has just been tested for tuberculosis and has been found to be free from disease of any kind. During the year there have been an average of 23 cows in milk. The yield per cow was 5647 pounds of milk and 335 pounds of butter. The cost of feed for the herd during the year was $946.18 and the cost of labor $1,074.32. The total receipts from the herd during the year were over $3,600. The valuation of the herd at this time is about $2,500. The old sire has been sold and another one purchased which promises to be an excellent bull.

An addition has been built to the calf barn, which gives considerably more room for the young stock.

Respectfully submitted,

SAMUEL E. BARNES, *Dairyman.*

REPORT OF THE LIBRARIAN

The librarian is occupied mainly with the care of the library, the editing and mailing of publications, and the making of photographs and lantern slides to illustrate the various features of Experiment Station work. During the year he has taken about 250 photographs and has made over 350 lantern slides for use at farmers' institutes and in the class room. Many of the photographs have already been reproduced in our own publications and in agricultural and other papers.

About 100 bound volumes have been secured during the past year, making 2500 now on the shelves. A few books were purchased, some acquired by donation, and a number, chiefly reports, received from the U. S. Department of Agriculture, state experiment stations and other institutions. In addition to these, 45 volumes obtained by subscription, and numerous sets of station bulletins, are ready for binding. The value of the library is thus being slowly but steadily enhanced.

Fourteen periodicals are subscribed for, most of them of a technical character. Besides reports and proceedings of various agricultural, scientific, philosophic and natural history societies, both home and foreign, about 80 farm journals are sent to the Station in exchange for bulletins. Among these are some of the best papers devoted to live stock, dairying, horticulture and general agriculture.

An increase of nearly 400 names is shown in the mailing list since the last report.

MAILING LIST

Experiment Stations and U. S. Dept. of Agr.	722
Newspapers in Tennessee	160
Exchanges	168
Farmers, Gardeners, Fruit Growers and others in Tennessee	9136
Other States	716
Foreign, other than Exchanges	35
	10937

The mailing list is now undergoing revision. Cards were sent out with the last bulletin containing blanks for name, post office, rural route and county, and the new list will be made up from the cards returned.

Respectfully submitted,

FREDERICK H. BROOME, *Librarian.*

TREASURER'S REPORT

JULY 1, 1902, TO JULY 1, 1903

The Agricultural Experiment Station of the University of Tennessee

IN ACCOUNT WITH THE UNITED STATES

		Dr.	Cr.
	To unexpended balance on hand July 1, 1902	$ 18 34	
1902			
July 7	To United States treasury draft	3,750 00	
Oct. 6	To United States treasury draft	3,750 00	
1903			
Jan. 9	To United States treasury draft	3,750 00	
April 3	To United States treasury draft	3,750 00	
By	Salaries		$ 8,035 81
	Labor		3,453 32
	Publications		749 45
	Postage and stationery		320 37
	Freight and express		47 50
	Heat, light and water		292 52
	Chemical supplies		196 15
	Seeds, plants and sundry supplies		353 16
	Fertilizers		145 04
	Feeding stuffs		123 49
	Library		275 27
	Tools, implements and machinery		278 33
	Furniture and fixtures		112 50
	Scientific apparatus		63 04
	Traveling expenses		238 45
	Contingent expenses		59 05
	Building and repairs		256 55
	Balance		18 34
	Totals	$15,018 34	$15,018 34

This is to certify, that, as the authorized Auditing Committee of the Board of Trustees of the University of Tennessee, we have examined the accounts of the Treasurer of the Agricultural Experiment Station for the fiscal year ending June 30, 1903, and find them correct; that the above is a true balance sheet corresponding with said accounts; that the said accounts show no more than $256.55 was expended for building and repairs, and that there is $18.34 cash balance.

(Signed) WM. RULE,
C. DEADERICK,
Auditing Committee.

We hereby certify that Wm. Rule and C. Deaderick are the authorized Auditing Committee of the Board of Trustees of the University of Tennessee.

(Signed) CHARLES W. DABNEY,
President University of Tennessee.
J. W. GAUT,
Secretary Board of Trustees.

State of Tennessee, County of Knox.

Before me, Thos. D. Morris, a Notary Public in and for said State and County, personally appeared the foregoing signers, personally known to me to be trustees and officers of the University of Tennessee, who made oath, in due form of law, that the above statements are true to the best of their knowledge, information and belief.

Witness my hand and official seal at office in Knoxville, Tennessee, this 27 day of January, 1904.

(Seal) THOS. D. MORRIS,
Notary Public.